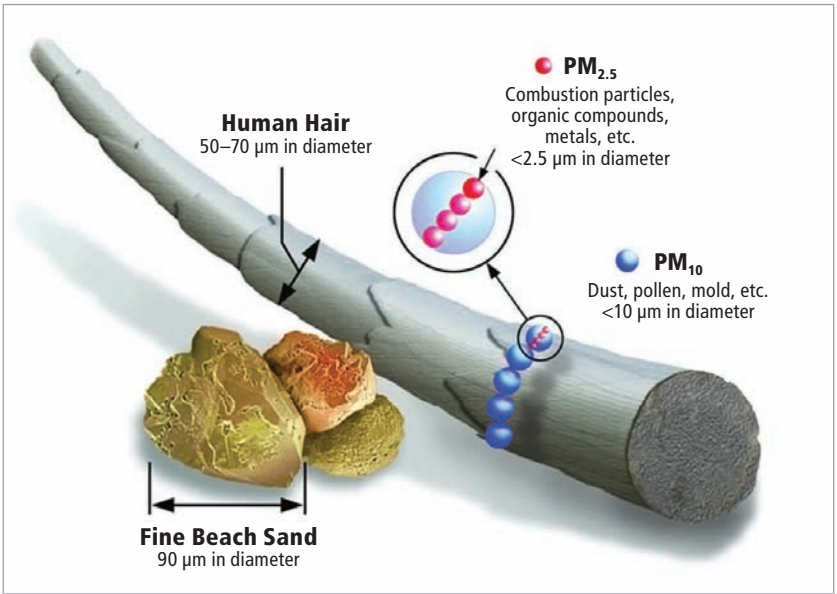
AIR POLLUTION

EPA Proposes Tighter Particulate Air Pollution Standards

Particulate matter (PM) is one of six criteria pollutants regulated by National Ambient Air Quality Standards (NAAQS). These standards are twofold: a primary standard protects human health, and a secondary standard protects crops, ecosystems, and other forms of "public welfare." The U.S. Environmental Protection Agency (EPA) last revisited the PM standards in 2006. Now, in response to a court order mandating action on the overdue review of these rules, the agency has proposed a stricter set of new standards.[1]

PM can be emitted directly from sources such as vehicles, power plants, burning biomass, and various industrial operations, or it can form as a reaction product. PM can contribute to a wide range of adverse health effects in people, with effects varying with the size and composition of the particles. Health damage occurs even in localities that meet current PM standards;[2] the EPA's advisory panel of independent experts, the Clean Air Scientific Advisory Committee (CASAC), noted in its correspondence with the agency regarding the proposed rules that "Although there is increasing uncertainty at lower levels [of PM exposure], there is no evidence of . . . a level below which there is no risk for adverse health effects."[3]



Particle size is an important factor in how PM affects human health. Larger PM_{10} is deposited mostly in the nose and throat. Because $PM_{2.5}$ can penetrate much deeper into the lung, it poses a greater health threat.

Image courtesy of U.S. EPA

For long-term effects of fine PM ($PM_{2.5}$), CASAC recommended the primary health standard be tightened from a current annual average of 15 μg/m³ to somewhere in the range of 11–13 μg/m³.[3] The EPA is proposing a standard in the range of 12–13 μg/m³ and is accepting public comments on levels down to 11 μg/m³. To address short-term effects, CASAC recommended a range of 30–35 μg/m³ averaged over 24 hours; the agency proposes to retain the current standard of 35 μg/m³.

The Beat | by Erin E. Dooley

Smoking Policies Tighten in Halls of Academe

As the fall 2012 semester gets under way, at least 744 U.S. colleges and universities have made their campuses completely smoke free, indoors and out, and nearly three-quarters of those have banned all forms of tobacco on campus.[1] Ty Patterson, executive director of the National Center for Tobacco Policy, told the *Christian Science Monitor*[2] that many colleges were prompted to make the change by the U.S. Surgeon General's 2006 statement that secondhand smoke is hazardous at any exposure level. A 2011 survey of nearly 28,000 college students at 44 schools reported daily smoking among 4.6% and occasional smoking in the past 30 days among 9.7%.[3]

China Bans Shark Fins for Official Fetes

China's Government Offices Administration of the State Council has announced it will issue guidelines to ban serving shark fin, a traditional delicacy, at official receptions.[4] Final guidelines are expected within one to three years. In addition to helping conserve shark populations around the world, the ban may also help limit human consumption of β-methylamino-L-alanine (BMAA), a cyanobacterial neurotoxin found in high concentrations in shark, as well as in other contaminated seafood and shellfish, drinking water supplies, and recreational waters.[5] Shark meat also typically contains high levels of methylmercury, and anecdotal reports suggest fins may be treated with formaldehyde before they are sold.[5]

The Chinese government will no longer serve shark-fin soup at official receptions.

New C8 Panel Findings

For several decades DuPont's Washington Works Plant in Parkersburg, West Virginia, released perfluorooctanoic acid (C8) into local waters, where it made its way into drinking water. The C8 Science Panel, appointed by the Wood County Circuit Court as part of a class-action legal settlement with DuPont, now reports finding probable links between exposure to C8 and ulcerative colitis and thyroid disease.[6] In earlier reports the panel identified similar C8 links to cancers of the kidney and testicle and to pregnancy-induced hypertension. The panel has found no C8 link to several other diseases studied.

For coarse PM (PM_{10}), the CASAC recommended the agency change not just the level of the standard but also its "form"—the air quality statistics used to determine whether an area is in compliance. The committee recommended adopting a level of 65–75 μg/m³ as the 98th percentile 24-hour concentration averaged over three years. The agency is proposing to keep the standard at the current 150 μg/m³ based on a so-called one-expected exceedance form—the 24-hour limit is not to be exceeded more than once a year averaged over three years.

The agency estimates that at any point in the proposed ranges the dollars saved from avoided health costs, sick days, and deaths would far outweigh costs paid by affected states, tribal lands, and counties to achieve the lower standards.[4] With $PM_{2.5}$ standards of 13 μg/m³ (annual) and 35 μg/m³ (24-hour), the EPA calculates annual health benefits of $88–220 million, with costs of $2.9 million.[5] Substituting an annual standard of 12 μg/m³, annual health benefits are estimated at $2.3–5.9 billion, with implementation costs of $69 million. At an annual standard of 11 μg/m³, annual health benefits would be an estimated $9.2–23.0 billion, with costs of $270 million.

The agency also calculated a scenario with an annual standard of 11 μg/m³ and a 24-hour standard of 30 μg/m³. Both the benefits and implementation costs are estimated to be roughly 50% higher than the configuration of 11 μg/m³ (annual) and 35 μg/m³ (24-hour).

About 30% of the U.S. population lives in the 191 counties or parts of counties designated as "nonattainment" for the current annual $PM_{2.5}$ standard. Attainment status is based on a rolling three years' worth of PM data for those counties with air monitors; for the rest, state and EPA officials must estimate each county's contribution to the larger area's PM pollution.

In figures published with the proposed standards, the EPA estimated 33 counties with monitors (with total populations of more than 27 million) would violate an annual standard of 13 μg/m³, an additional 49 counties (with more than 27 million additional people) would violate 12 μg/m³, and an additional 86 counties (with tens of millions more people) would violate 11 μg/m³.[6] These figures were based on 2008–2010 monitoring data.

Ted Cromwell, senior principal for environmental policy at the National Rural Electric Cooperative Association, questions the wisdom of further tightening the standards without knowing which specific chemical constituents of $PM_{2.5}$ are responsible for associated health effects.[7] He'd prefer to continue implementation of the current standard until research more definitively pins down those substances, and then target them specifically.

The EPA is reviewing public comments on the proposal and is required by the court-approved consent decree to issue final rules by 14 December 2012. Mitigation measures are supposed to begin by 2015 and must be fully implemented by 2020.

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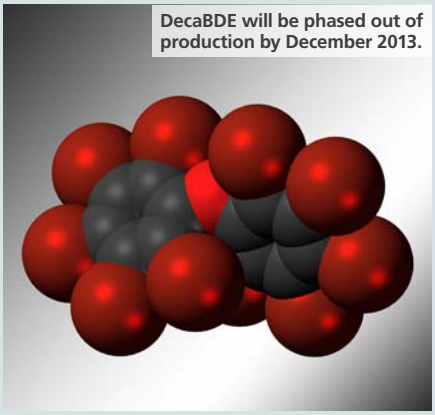

DecaBDE will be phased out of production by December 2013.

EPA Solicits Comments on DecaBDE Substitute Report

Exposure to the persistent, bioaccumulative flame retardant decabromodiphenyl ether (decaBDE) has been linked to developmental health effects, and the compound is scheduled to be phased out of production by December 2013. In July 2012 the U.S. EPA Design for the Environment program released a comprehensive draft report on potential alternatives to the compound.[7] The report will allow manufacturers to weigh the pros and cons of 30 alternatives, all of which are already on the market. Public comments on the report are being accepted through the end of September 2012.

More Scientists Call for an End to Asbestos

Asbestos use is largely banned in industrialized nations because of health concerns, but imports are growing in poorer nations. In July 2012 the Joint Policy Committee of the Societies of Epidemiology, representing 12 member organizations, issued a joint statement calling for exporting nations to cease production of all forms of asbestos and for importing nations to cease its use.[8] The statement follows the June 2012 approval of a $58-million loan by the Quebec provincial government to reopen and expand the Jeffrey mine, Canada's last remaining asbestos mine.[9]

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